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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,192	09/26/2001	Varun Singh	20661-801D1	2113

7590 05/18/2004  
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EXAMINER

LEE, EUGENE

ART UNIT PAPER NUMBER

2815

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/964,192

Applicant(s)

SINGH ET AL.

Examiner

Eugene Lee

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,11,12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/24/04 has been entered.

### ***Specification***

2. The amendment filed 2/24/04 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: a polycrystalline silicon resistor has at least a first and second order temperature coefficient, wherein the sign of said first and second order temperature coefficients are opposite each other and further wherein said dopant consist essentially of Phosphorus.

The ORIGINAL disclosure does not state the same resistor having first and second order temperature coefficients wherein said dopant consist essentially of Phosphorus.

Applicant is required to cancel the new matter in the reply to this Office Action.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 2, 11, and 12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear how a polycrystalline silicon resistor can have at least a first and second order temperature coefficient wherein the sign of said first and second order temperature coefficients are opposite (positive and negative) each other and further wherein said dopant consist essentially of Phosphorus. The limitation “a polycrystalline silicon resistor has at least a first and second order temperature coefficient, wherein the sign of said first and second order temperature coefficients are opposite each other and further wherein said dopant consist essentially of Phosphorus” is new matter since it is not originally supported by the disclosure.

It is also unclear how a resistor, having only a dopant essentially of Phosphorus can affect a resistor to have two different first and second order coefficient that are opposite each other.

The specification does not disclose a multi-variable polynomial and therefore it is still unclear how the resistor can have two different first and second order coefficients that are opposite each other.

Art Unit: 2815

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 2, 11, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, 2, 11, and 12 recites the limitation "said dopant" in line 10 of, for example, claim 1. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

8. Claims 2, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Baldwin et al. 6,333,238 B2. Baldwin discloses (see, for example, column 3, line 62 until column 4, line 3) a polysilicon resistor with opposite temperature coefficients (TCRs). In column 4, lines 4-5, Baldwin states a positive head TCR1 and a negative body TCR1.

Art Unit: 2815

Regarding the limitations “doping concentrations of less than  $\sim 3.75 \times 10^{20} \text{ cm}^{-3}$ , greater than  $\sim 6 \times 10^{19} \text{ cm}^{-3}$ ” stated in claims 2, and 11 respectively, see column 4, lines 1-2 wherein Baldwin discloses the doping concentration as  $1.6 \times 10^{20} \text{ cm}^{-3}$  and higher. This doping concentration is essentially phosphorus.

Regarding the limitation “resistor resistance is electronically trimmable within a range from 60% to 30% of original value”, it has been held that the recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ 2d 1647 (1987).

9. Claims 1, 2, 11, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Jang 5,545,910. Jang discloses (see, for example, FIG. 2 and column 3, lines 32-35) a current limiting resistor comprising a polycrystalline silicon region (polycrystalline silicon resistor) 112. In column 3, lines 12-14, Jang discloses the doping concentration as being  $10^{20}$ . In column 3, lines 1-2, Jang discloses the dopant as phosphorus.

The limitation “wherein the sign of said first and second order temperature coefficients are opposite each other” does not structurally differentiate the applicant’s resistor from the Jang’s polysilicon resistor with said doping concentration.

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2815

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baldwin et al.

6,333,238 B2. Baldwin discloses (see, for example, column 3, line 62 until column 4, line 3) a polysilicon resistor with opposite temperature coefficients (TCRs). In column 4, lines 4-5, Baldwin states a positive head TCR1 and a negative body TCR1.

Regarding the limitation “doping concentrations of less than  $\sim 6 \times 10^{19} \text{ cm}^{-3}$  to  $1 \times 10^{20} \text{ cm}^{-3}$ ”, Baldwin does not explicitly disclose this range. However, it would have been obvious to one of ordinary skill in the art at the time of invention was made to use this range, in order to optimize resistance of the polysilicon resistor since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

#### ***Prior Art***

12. The prior art of made of record and not relied upon is considered pertinent to applicant's disclosure. See, for example, Kapoor '511 wherein Kapoor explains (see column 1, lines 57-) temperature coefficients.

#### ***Response to Arguments***

13. Applicant's arguments with respect to claims 1, 2, 11, and 12 have been considered but are moot in view of the new ground(s) of rejection.

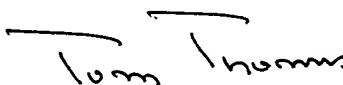
### INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 571-272-1733. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eugene Lee  
May 3, 2004

  
TOM THOMAS  
SUPERVISORY PATENT EXAMINER  
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